

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-4, 6-21 and 23-30 will be pending in the application subsequent to entry of this Amendment.

As a preliminary matter, the drawings submitted with this application are believed to be in formal order although the Official Action Summary, item 10 did not indicate the drawings were accepted by the examiner. Please indicate the acceptance (or not) in the next communication.

The title to the application has been changed to one that more aptly describes the claimed subject matter. This is responsive to item 1 of the Official Action.

The claims have been amended in order to more particularly point out and distinctly claim that which applicants regard as their invention and to highlight important features of the disclosure. Claim 1 has been restricted to the “parallel folding” feature, i.e. “wherein one or more subsequent folds is made with the fold line extending perpendicular to the original length of the stacked structure and its overall length is halved at each fold” and corresponding method claim 19 has been amended similarly. Claims 5 and 22 have been consequentially deleted and the dependencies of claims 6 and 23 have been amended accordingly.

New claim 30 has been added to the application, this claim being directed to a primary lithium/solid cathode pouch battery comprising, *inter alia*, a double-sided anode comprising a current collector in the form of a mesh or grid with lithium foil occupying the openings thereof, and wherein one or more successive folds comprise folding the stacked structure so its overall length is halved with each fold, the fold lines being made perpendicular to that length.

Particular patentability is alleged for claim 30, which combines the benefits of two novel features, i.e. the “parallel folding” technique (see below for the advantages thereof) and a double-sided mesh anode, the advantages of the mesh anode being to preserve structural integrity and current flow, regardless of the extent of anode breakdown (c.f. page 2, para [0023] of published application US 2005/0191545).

The balance of the Official Action includes two prior art-based rejections. To the extent that the cited prior art pertains, if at all, to the amended claims presented above, both rejections are respectfully traversed.

Claim Rejection under 35 USC § 102

Original claims 1-15 and 17-29 have been rejected as anticipated by Giwa *et al* (Proceedings of the 39th Power Sources Conference, June 2000, p32-35). The Applicant has now restricted product claim 1 and corresponding method claim 19 to incorporate the “parallel folding” feature of respective dependent claims 5 and 22, and submits that the claims as amended are novel over Giwa *et al* for at least the following reasons:

- (i) The present invention is concerned with a novel pouch cell construction, which construction involves making one or more subsequent folds with the fold line extending perpendicular to the original length of the stacked structure and halving the overall length at each fold. This pouch cell construction, and associated method, contrasts with prior art ‘zig-zag’ fold or wound cell constructions and has several advantages thereover, e.g. rapidly reducing cell size, improving the utilization of cell materials and facilitating electrolyte filling (c.f. page 1, para [0011] of US 2005/0191545).
- (ii) The Examiner has stated at page 3 of the Office Action that Giwa *et al* teaches folding the cell five times, starting with a sheet that is 240cm x 7.5 cm and ending with a folded construction that is 7.5 x 7.5 cm, and concludes from this firstly, that four subsequent folds were made upon the same side of the stacked structure, secondly, that the fold line extended perpendicular to the original length of the stacked structure and thirdly, that the overall length is halved at each fold. (In other words, the claimed parallel folding feature.) This is not so.

It is well established that a reference, to constitute legally recognizable prior art, must teach how to make that which it discloses. *See In re Hoeksema*, 399 F.2d 269, 274, 158 USPQ 596, 600-01 (CCPA 1968).

In response to the Examiner, the Applicant wishes to point out that the “Cell Construction” section of Giwa *et al* is, in fact, completely ambiguous and contains absolutely no clear teaching as to the method of constructing the pouch batteries described therein. Although the document states that a folded construction is used, and provides the final capacities of the cells so-obtained, it is submitted that specific details of the actual folding method are neither disclosed in nor clearly derivable from the document. In other words, Giwa *et al* does not contain

an enabling disclosure of cell construction for the purpose it is being applied as prior art. It is further submitted that the average skilled person, upon reading Giwa *et al*, would be aware of prior art laying-up methods (e.g. 'zig-zag' folds and wound electrodes) and would have no reason to suppose that cell construction in the Giwa *et al* reference deviates from those standard methods. Indeed, the statement that each fold is 7.5 x 7.5 cm (c.f. 5th and 6th lines of "Cell Construction") implies a method such a zig-zag folding, where the folds are of equal size.

Thus, Giwa *et al* is not enabling in respect of precisely how the pouch cells are folded and the Applicant submits that the Examiner is merely speculating, with the benefit of hindsight and knowledge of the present invention, as to the document's disclosure. More specifically, the Examiner's statement that Giwa *et al* teaches ending with a folded construction that is 7.5 x 7.5 cm is **incorrect**. As mentioned above, Giwa *et al* teaches that each fold is 7.5 x 7.5 cm, whereas, if a parallel folding method is applied, each fold is of a different size, becoming successively smaller. The Official Action does not correctly state the content of the applied reference.

In view of the above, it is submitted that Giwa *et al* does not enable the average skilled person to practice the invention as claimed and nor does the reference suggest using a "parallel folding" technique as required by amended claim 1. Thus, amended claims 1 and 19 are patentable over Giwa *et al* and claims 2-4, 6-18, 20-21 and 23-27 are patentable by virtue of their respective dependencies. The above arguments apply similarly to independent claim 28.

Rejection under 35 USC § 103

The rejection of claim 16 as obvious over US 2003/0194604 to Aamodt does not apply, due to the dependency of claim 16 on inventive claim 1. Nevertheless, the Applicant would like to point out that, contrary to the Examiner's opinion, Aamodt does not teach a double-sided lithium anode in the form of a mesh or grid. Rather, Aamodt merely teaches that a current collector in the form of a metal grid can be used, in a wound lithium battery, to stabilize and reinforce the cohesive bond between two lithium foils. It can be seen from Figure 2, and by referring to the text at page 3, para [0027], that the metal grid is laid over the thin piece of alkali metal (15) with only a small area of overlap (8) between the thin alkali metal and the elongated (double-sided) alkali metal (10). The thinner foil forms the outermost windings of the cell and provides enough lithium for depleting the cathode material facing only the inner side of the outer

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most winding (c.f. page 2, para [0013]). In other words, the thin lithium foil comprising a metal grid current collector is not a double-sided anode.

For the above reasons it is respectfully submitted that the claims of this application define inventive subject matter. Reconsideration and allowance are solicited. Should the examiner require further information, please contact the undersigned.

Respectfully submitted,

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